AMENDMENTS TO THE CLAIMS:

Listing of claims:

This listing of claims replaces all prior versions and listings of claims in the application.

Claims 1 - 104 (Canceled)

Claim 105 (Previously Presented) An inspection apparatus (70, 700) for inspecting an object of inspection by irradiating the object of inspection with either one of charged particles or an electromagnetic wave, comprising:

a working chamber controllable into a vacuum atmosphere for inspecting an object of inspection;

a beam source for generating either one of the charged particles or the electromagnetic wave as a plurality of beams;

a primary electronic optical system for irradiating the plurality of beams to the object of inspection held in the working chamber, and a secondary electronic optical system for converging secondary charged particles generated from the object and leading to an image processing system which forms an image based on the secondary charged particles;

a data processing system for displaying and/or memorizing a state information of the object based on output of the image processing system; and

a stage system for holding the object so as to be movable relative to the beam,

wherein an electric field for accelerating the charged particle beams is applied between a first stage lens of the secondary optical system and a surface of the object, and the secondary

charged particles emitted from the surface of the object at an angle at least 45 degrees relative to a normal line of the surface of the object pass through the secondary optical system,

wherein the primary and secondary electronic optical systems comprise an objective lens and an E x B separator, and include an optical system for accelerating secondary charged particles emitted by irradiation of the beams through the objective lens, separating the particles by the E x B separator, and projecting an image of secondary charged particles, and a plurality of detectors for detecting the image of secondary charged particles, and wherein there is at least one lens between the E x B separator and the detectors.

Claim 106 (Previously Presented) The inspection apparatus of claim 105, comprising a transfer mechanism for holding the object and for transferring the object into or out of the working chamber.

Claim 107 (Previously Presented) The inspection apparatus of claim 106, wherein the transfer mechanism comprises the working chamber containing the stage system and being capable to be controlled in the vacuum atmosphere, and a loader for supplying an object of inspection on the stage system in the working chamber, and wherein the working chamber is supported on a floor via a vibration isolator for isolating vibrations from the floor.

Claim 108 (Previously Presented) The inspection apparatus of claim 105, further comprising a voltage applying system for applying voltage to the object of inspection in the working chamber; and an alignment control device for controlling alignment by observing a surface of the object of inspection in order to position the object relative to the electronic optical system.

Claim 109 (Canceled)

Claim 110 (Previously Presented) The inspection apparatus of claim 107, wherein the loader comprises a first loading chamber and a second loading chamber, each being separate from the other and arranged so as to control atmosphere of its inside; a first transferring unit for transferring the object of inspection between the inside of the first loading chamber and the outside thereof; and a second transferring unit disposed at the second loading chamber for transferring the object of inspection between the inside of the first loading chamber and the stage system; wherein the inspection apparatus is further provided with a mini-environment space partitioned for feeding the object of inspection to the loader.

Claim 111 (Previously Presented) The inspection apparatus of claim 105, further comprising a laser interferometer for detecting coordinates of the object of inspection on the stage system; wherein the coordinates of the object of inspection are determined by utilizing a pattern present on the object of inspection with the alignment control unit.

Claim 112 (Previously Presented) The inspection apparatus of claim 110, wherein the alignment of the object of inspection includes rough alignment to be performed within the mini-environment space and alignment in the XY-directions and in the direction of rotation to be performed on the stage system.

Claim 113 (Previously Presented) A method for manufacturing devices comprising the steps of:

a. providing a wafer;

b. processing the wafer;

c. detecting a defect on the wafer using the inspection apparatus of claim 105;

d. repeating necessary times of the steps b and c;

e. assembling the wafer into a device.

Claim 114 (Currently Amended) An inspection apparatus (1000) for irradiating charged particles to a sample and for detecting secondary charged particles emitted from the sample, comprising:

~~at least~~ one primary optical system with an optical axis for irradiating the sample with a plurality of charged particle beams; and

~~at least~~ one secondary optical system with an optical axis for leading the secondary charged particles to a plurality of detectors;

wherein the plurality of the charged particle beams are irradiated each at a position separated larger than a distance resolution of the secondary optical system.

Claim 115 (Currently Amended) The inspection apparatus of claim 114, wherein the primary optical system has a function of scanning the charged particle beams at a distance greater than the interval of neighboring charged particle beams simultaneously.

Claim 116 (Previously Presented) The inspection apparatus of claim 114, wherein the plurality of the charged particle beams are delivered generally perpendicularly to the surface of the sample; and

the secondary charged particles are deflected with the E x B separator and separated from the primary optical system.

Claim 117 (Previously Presented) A method for manufacturing devices comprising the steps of:

a. providing a wafer;

b. processing the wafer;

c. detecting a defect on the wafer using the inspection apparatus of claim 114;

d. repeating necessary times of the steps b and c;

e. assembling the wafer into a device.

Claim 118 (Previously Presented) An inspection apparatus (4000) comprising:

a primary electronic optical system with an optical axis for irradiating a surface of a sample by a plurality of primary charged particles; and

a secondary electronic optical system for leading secondary charged particles emitted from each point of irradiation by the plurality of the primary charged particles formed on the surface of the sample to a secondary electron detector after separation from the primary electronic optical system by accelerating the secondary charged particles by means of an electric field applied between an objective lens and the surface of the sample, converging the secondary charged particles accelerated, and separating the secondary charged particles from the first optical system by an E x B separator disposed between the objective lens and a lens at the side of a beam source.

Claim 119 (Previously Presented) A method for manufacturing devices comprising the steps of:

a. providing a wafer;

b. processing the wafer;

c. detecting a defect on the wafer using the inspection apparatus of claim 118;

d. repeating necessary times of the steps b and c;

e. assembling the wafer into a device.

Claim 120 (Currently Amended) An inspection apparatus (4000) having a primary electronic optical system with an optical axis for irradiating a surface of a sample with a plurality of charged particle beams; a secondary electronic optical system ~~with an optical axis~~ for

converting secondary charged particles respectively from points of irradiation by the plurality of the primary charged particle beams formed on the surface of the sample and leading to a secondary charged particle detector for detecting the secondary charged particles, wherein the secondary charged particles from a predetermined region on the surface of the sample are detected ~~while~~ during transferring the sample;

wherein the primary electronic optical system is configured in such a manner that points of irradiation by the primary charged particles are formed on the surface of the sample in a two-dimensional way, and the primary charged particles are disposed ~~nearby~~ inside a circle of which is said optical axis.

Claim 121 (Previously Presented) An inspection apparatus comprising: a primary charged particle beam irradiation device including a beam source, an aperture plate having a plurality of apertures adapted to form a plurality of charged particle beams, the beams being formed by containing particles generated by the beam source to form a plurality of irradiation points, and the plurality of apertures are located within a range of a predetermined current density of the charged particles emitted from the beam source.

Claim 122 (Previously Presented) The inspection apparatus of claim 121, wherein each of the points of irradiation by the primary charged particle beams is scanned by a deflector in a direction perpendicular to the direction of successive transfer of the sample.

Claim 123 (Previously Presented) A method for manufacturing devices comprising the steps of:

a. providing a wafer;

b. processing the wafer;

c. detecting a defect on the wafer using the inspection apparatus of claim 120;

d. repeating necessary times of the steps b and c;

e. assembling the wafer into a device.

Claim 124 (Currently Amended) An inspection apparatus for inspecting a sample using a plurality of beams, comprising:

a primary charged particle beam irradiation device including a beam source and a plurality of primary charged particle beam irradiation systems ~~having an optical axis~~, a lens and a deflector, each primary charged particle beam irradiation system being adapted to form a plurality of points of irradiation with primary ~~electron~~ charged particle beams on the surface of the sample using an aperture plate,

a plurality of secondary charged particle optical systems each corresponding to each primary charged particle beam irradiation system, the secondary charged particle optical systems ~~having an optical axis~~, a lens and a plurality of secondary ~~electron~~ charged particle detectors with a plurality of apertures, and

an objective lens and an E x B separator which are common to the primary charged particle beam irradiation systems and the secondary charged particle optical systems,

wherein secondary charged particles are separated from the primary charged particle beams after they pass through the objective lens before they enter to the next lens.

Claim 125 (Previously Presented) An inspection apparatus (4100) comprising: a primary optical system having a single beam source for irradiating output beam to an aperture plate with a plurality of apertures and for irradiating charged particles passed through the plurality of apertures on a sample, wherein the secondary charged particles generated from the sample are separated from the primary optical system by an E x B separator, and the separated secondary charged particles are delivered into a plurality of detectors so as to be detected through a secondary optical system having at least one stage lens between the E x B separator and the detectors.

Claim 126 (Currently Amended) An inspection apparatus (4100) comprising: ~~a primary optical system having a beam source with an integrated cathode with multiple emission areas for irradiating output beam to an aperture plate with a plurality of apertures and for focusing and irradiating beams passed through the plurality of apertures on a sample surface, wherein the secondary charged particles generated from the sample are separated from the primary optical system by an E x B separator, and the separated secondary charged particles are delivered into a plurality of detectors so as to be detected through a secondary optical system having at least one stage lens~~ a plurality of optical systems each having a beam source for irradiating output beam and focusing and irradiating beam passed through the optical system on a sample surface, wherein secondary charged particle generated from the sample is separated from the optical

system by an E x B separator, and the separated secondary charged particle is delivered into a detector so as to be detected, wherein said plurality of optical systems are disposed in two row and multiple columns, and the detectors in the first row and the detectors in the second row are disposed oppositely each other in order not to interfere with each other.

Claim 127 (Previously Presented) An inspection apparatus (4100) for irradiating a beam emitted from a beam source to an aperture plate having a plurality of apertures to produce images of the plurality of the apertures, delivering the plurality of the images to a sample, separating the secondary charged particles generated from the sample from a primary optical system to deliver the secondary charged particles into a secondary optical system, and enlarging the secondary charged particles by the secondary optical system to project to a surface of a detector,

wherein a single aperture plate is disposed in a position deviated toward the side of the source of the electron beam from the position of an image of the beam source formed by a lens of the primary optical system, and the position of the single aperture plate in the direction of the optical axis thereof is disposed so as to minimize the difference in beam strength of the beams to be delivered from each aperture to the surface of the sample.

Claim 128 (Previously Presented) An inspection apparatus (4100) for irradiating a beam emitted from a beam source to an aperture plate having a plurality of apertures to produce images of the plurality of the apertures, delivering the plurality of the images to a sample, separating the secondary charged particles generated from the sample from a primary optical system to deliver the secondary charged particles into a secondary optical system, and enlarging the secondary

charged particles by the secondary optical system to project to a surface of a detector, wherein a single aperture plate is disposed in a position deviated toward the side of the beam source from a position of an image of the beam source formed by the primary optical system, and wherein an amount of deviation is set so that a difference between an amount of detection of the secondary charged particles obtained for the plurality of the apertures is minimized when a sample with no pattern is disposed on a surface of the sample.

Claim 129 (Previously Presented) A method for manufacturing devices comprising the steps of:

a. providing a wafer;

b. processing the wafer;

c. evaluating the wafer using the inspection apparatus of claim 125;

d. repeating necessary times of the steps b and c;

e. assembling the wafer into a device.

Claim 130 (Previously Presented) An inspection apparatus (4200) for irradiating a beam emitted from a beam source to an aperture plate having a plurality of apertures, projecting and scanning a reduced image of the primary charged particles passed through the plurality of the apertures by using a primary optical system with an optical axis on a sample, and enlarging the secondary charged particles emitted from the sample by a secondary optical system with an optical axis to project them into a detector, wherein the positions of the plurality of the apertures are disposed so as to correct a distortion of the primary optical system.

Claim 131 (Currently Amended) An inspection apparatus (4200) for irradiating a first multi-aperture plate having a plurality of apertures with beams emitted from a beam source, projecting and scanning a reduced image of the primary charged particle beams passed through the plurality of the apertures on a sample by using a primary optical system ~~with an optical axis~~, and enlarging by a secondary optical system with an optical axis the secondary charged particles emitted from the sample to detect them using a detector having a plurality of detecting elements,

wherein the irradiating points of the primary electron beams are disposed in rows N and in columns M in a direction perpendicular to the direction of the rows, and wherein one secondary optical system has at least one lens along said optical axis and multiple detectors.

Claim 132 (Previously Presented) An inspection apparatus (4200) of claim 131, wherein shapes of the plurality of the apertures are set so as to correct field astigmatism of the primary optical system.

Claim 133 (Currently Amended) An inspection apparatus (4200) adapted to acquire image data in a multi-channel by irradiating an aperture plate having a plurality of apertures with beams emitted from a beam source, projecting and scanning reduced images of charged particles passed through the apertures thereof on the sample with a primary optical system including an optical axis and an E x B separator, and projecting images of the secondary charged particles emitted from the sample on a detector by means of an imaging optical system;

wherein the ~~images of the secondary charged particles are formed on a deflecting main plane of the E x B separator~~ primary optical system has a deflection system which scans the charged particle beams simultaneously.

Claim 134 (Previously Presented) A method for manufacturing devices comprising the steps of:

a. providing a wafer;

b. processing the wafer;

c. evaluating the wafer using the inspection apparatus of claim 131;

d. repeating necessary times of the steps b and c;

e. assembling the wafer into a device.

Claim 135 (Currently Amended) An inspection method for irradiating electron beam to a sample to inspect the sample, comprising:

(a) irradiating a surface of the sample with a plurality of primary electron beams by a primary electronic optical system ~~with an optical axis~~,

(b) converging secondary electrons generated from each of irradiating points of the a plurality of primary electron beams formed on the surface of the sample,

(c) leading converged secondary electrons toward to a detector by a secondary optical system ~~with an optical axis~~,

(d) detecting the secondary electrons using a plurality of detectors,

(e) repeating above steps (a) to (d) ~~while~~ during transferring the sample successively,

wherein the irradiating points of the primary electron beams are disposed in rows N ~~in a direction of transferring the sample~~ and in columns M ~~in a direction perpendicular to the direction of transferring the sample~~.

Claim 136 (Currently Amended) The inspection apparatus of claim 124, wherein the primary optical system and the secondary optical system are disposed in two rows and in plural columns so as to prevent a path of secondary charged particles deflected by one of the E x B separators from interfering with other column of a path of the secondary charged particles deflected by the other E x B separator, and wherein the secondary ~~optical system in the first row and the secondary optical system in the second row are disposed in the opposite direction with each other~~ charged particle detectors in the first row and the secondary charged particle detectors in the second row are disposed oppositely each other in order not to interfere with each other.

Claim 137 (Previously Presented) An inspection apparatus (4300) having a primary optical system containing an optical axis, a beam source discharging a beam, an aperture plate with a plurality of apertures, a plurality of lenses, and an E x B separator so as to irradiate a surface of a sample to be inspected with the beam emitted from the beam source, and a secondary optical system with an optical axis for separating secondary charged particles emitted from the sample from the primary optical system by the E x B separator, and delivering and detecting the secondary charged particles in a secondary charged particle detector;

wherein an image of each of the plurality of the apertures is formed by irradiating the aperture plate with the beam from the beam source, and a scanning voltage is superimposed on an electric field of the E x B separator so as to have the beam deflect.

Claim 138 (Currently Amended) The inspection apparatus of claim 137, wherein plural sets of the primary optical system and the secondary optical system are disposed in two rows and in plural columns so that paths of the secondary charged particles deflected by the E x B separator do not interfere with each other, and wherein the secondary ~~optical system in the first row and the secondary optical system in the second row are disposed in the opposite direction with each other~~ charged particle detectors in the first row and the secondary charged particle detectors in the second row are disposed oppositely each other in order not to interfere with each other.

Claim 139 (Previously Presented) A method for manufacturing devices comprising the steps of:

a. providing a wafer;

b. processing the wafer;

c. detecting a defect on the wafer using the inspection apparatus of claim 137;

d. repeating necessary times of the steps b and c;

e. assembling the wafer into a device.

Claim 140 (Currently Amended) An inspection method for inspecting a sample using a plurality of beams, comprising:

a. emitting charged particle beams from a plurality of beam generators;

b. irradiating an aperture plate having a plurality of apertures with each of the charged particle beams;

c. focusing and scanning the plurality of beams formed by the plurality of the apertures on a sample surface by primary optical systems each of which comprises an optical axis, a lens and a deflector;

d. converging secondary electrons emitted from scanning points on the sample and separating them from the primary optical system by a plurality of E x B separators;

e. forming an enlarged image of the secondary electrons in detecting devices each of which comprises a plurality of detectors through secondary optical systems each of which comprises an optical axis and at least one stage lens;

f. detecting through the plurality of detectors and forming an image;

wherein the primary and the secondary optical columns are disposed in two rows and in plural columns and directions of deflection of the E x B separators are set so that the secondary ~~optical systems in the first row and the secondary optical system in the second row are disposed in the opposite direction with each other~~ electron detectors in the first row and the secondary electron detectors in the second row are disposed oppositely each other in order not to interfere with each other .

Claim 141 (Currently Amended) An inspection method for inspecting an object to be inspected by irradiating the object to be inspected with charged particles, the method comprising:

~~wherein~~

providing a working chamber controllable into a vacuum atmosphere for inspecting an object to be inspected, a beam source for generating charged particles as a plurality of beams, an electronic optical system in which a plurality of the beams is irradiated onto the object held in the working chamber so as to be inspected and secondary charged particles generated from the object to be inspected are detected so as to introduce them into an image processing system[[,]] ~~an image processing system~~ for forming an image by the secondary charged particles, a data processing system for displaying and/or storing a state information of the object to be inspected based on an output from the image processing system, and a stage system for operatively holding the object to be inspected so as to be movable with respect to the beam ~~are provide, said inspection method comprising the steps of:~~ ;

precisely positioning the beam on the object to be inspected by measuring a position of the object to be inspected;

deflecting the beam of charged particles to a desired position on a surface of the measured object to be inspected;

irradiating the desired position on the surface of the object to be inspected with the beam;

detecting secondary charged particles generated from the object to be inspected;

forming an image by the secondary charged particles; and

displaying and/or storing a state information of the object to be inspected based on an output of the image processing system,

wherein the plurality of beams are disposed of a two dimensional way and disposed ~~nearby the~~ around one optical axis.

Claim 142 (Currently Amended) An inspection method (1000) for irradiating charged ~~particles~~ particle beams to a sample and for detecting secondary charged particles emitted from the sample, comprising:

irradiating the sample with a plurality of primary charged particle beams ~~and~~ through at least one primary optical system ~~with an optical axis,~~ , and

leading the secondary charged ~~particle beams~~ particles to at least one detector through at least one secondary optical system ~~with an optical axis~~, wherein the primary ~~plurality of the~~ charged particle beams to the sample are irradiated with each spaced by a distance ~~at a position~~ greater than a distance resolution of the secondary optical system.

Claim 143 (Currently Amended) An inspection method (4100) comprising:

irradiating a beam emitted from a single beam source with multiple emitting cathodes to an aperture plate with a plurality of apertures;

irradiating charged particles passed through the plurality of apertures to a sample by a primary optical system;

separating secondary charged particles generated from the sample from the primary optical system by an E x B separator; and

delivering the separated secondary charged particles through a secondary optical system ~~having at least one stage lens~~ into a plurality of detectors so as to be detected.

Claim 144 (Currently Amended) An inspection method (4100) comprising the steps of:

irradiating a beam emitted from a beam source with ~~an~~ multiple integrated ~~cathode~~ cathodes to an aperture plate with a plurality of apertures;

focusing and irradiating beams passed through the plurality of apertures onto a sample surface by a primary optical system;

separating secondary charged particles generated from the sample from the primary optical system by an E x B separator; and

delivering the separated secondary charged particles through a secondary optical system ~~having at least one stage lens and~~ into a plurality of detectors so as to be detected~~, wherein said at least one stage lens is disposed between said E x B separator and said detectors~~ .

Claim 145 (Previously Presented) An inspection method (4100) comprising the steps of:

delivering a plurality of images of apertures to a sample, said plurality of images of apertures being produced by irradiating a beam emitted from a beam source onto an aperture plate having a plurality of apertures; and

separating secondary charged particles generated from the sample from a primary optical system to be delivered into a secondary optical system, and enlarging the secondary charged particles by the secondary optical system to be projected onto a surface of a detector,

wherein the plurality of apertures are located within a range of a predetermined current density of the charged particles emitted from the beam source.

Claim 146 (Previously Presented) An inspection method (4100) comprising:

delivering a plurality of images of apertures onto a sample, said plurality of images of apertures being produced by irradiating a beam emitted from a beam source to an aperture plate having a plurality of apertures; and

separating secondary charged particles generated from the sample from a primary optical system to be delivered into a secondary optical system, and enlarging the secondary charged particles by the secondary optical system to be projected to a surface of a detector by an E x B separator disposed between the objective lens and a lens at the side of the beam source.

Clam 147 (Currently Amended) An inspection method (4200) comprising:

irradiating a first multi-aperture plate having a plurality of apertures with beams emitted from a beam source;

projecting and scanning a reduced image of primary charged particles passed through the plurality of the apertures onto a sample by using a primary optical system; and

enlarging secondary charged particles emitted from the sample, by a secondary optical system to detect them by a detector having a plurality of detecting elements; and

wherein the secondary charged particles emitted from the surface of the ~~object~~ sample at an angle at least 45 degrees relative to a normal line of the surface of the ~~object~~ sample pass through the secondary optical system, and wherein an accelerated field for the secondary electron is formed between the objective lens and the surface of the ~~object~~ sample.

Claim 148 (Previously Presented) An inspection method (4300) comprising:

providing a primary optical system comprising a single beam source for discharging a beam, an aperture plate with a plurality of apertures, a plurality of lenses, and an E x B separator, so as to irradiate a surface of a sample to be inspected with the beam emitted from the beam source; and

separating secondary charged particles emitted from the sample from the primary optical system by the E x B separator so as to introduce them into a secondary charged particle detector to be detected therein;

wherein the beam from the beam source is irradiated onto the aperture plate to form an image of the plurality of apertures, and a scanning voltage is superimposed on an electric field of the E x B separator so as to cause a deflecting operation of the beam.

Claim 149 (Previously Presented) An inspection method (4300) comprising the steps of:

providing a primary optical system comprising a single beam source for discharging a beam, an aperture plate provided with a plurality of apertures, a plurality of lenses and an E x B separator so that the beam from the beam source is irradiated onto a surface of a sample; and

separating secondary charged particles emitted from the sample from the primary optical system by the E x B separator so as to enter a secondary charged particle detecting device to be detected thereby;

wherein the beam from the beam source is irradiated onto the aperture plate to form an image of the plurality of apertures, a position of the image of the plurality of apertures is made to correspond to a position of the E x B separator.